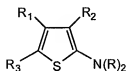


### **Listing of the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-3 (canceled)

4. (previously presented) A thiophene monomer of the formula:



wherein:

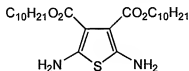
R is selected from the group consisting of H, Me and Et;

R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of H, CN, C<sub>1</sub>-C<sub>10</sub> alkyl group and CO<sub>2</sub>R<sub>4</sub>;

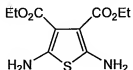
R<sub>3</sub> is selected from the group consisting of NH<sub>2</sub> and CHO; and

R<sub>4</sub> is a C<sub>1</sub>-C<sub>10</sub> alkyl group.

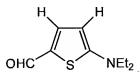
5. (previously presented) The thiophene monomer of claim 4, having the formula:



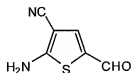
6. (previously presented) The thiophene monomer of claim 4, having the formula:



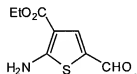
7. (previously presented) The thiophene monomer of claim 4, having the formula:



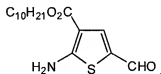
8. (previously presented) The thiophene monomer of claim 4, having the formula:



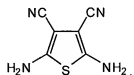
9. (previously presented) The thiophene monomer of claim 4, having the formula:



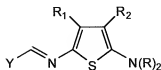
10. (previously presented) The thiophene monomer of claim 4, having the formula:



11. (previously presented) The thiophene monomer of claim 4, having the formula:



12. (previously presented) A dimer of the formula:



wherein:

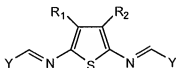
R is selected from the group consisting of H, Me and Et;

R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of H and CO<sub>2</sub>R<sub>4</sub>;

R<sub>4</sub> is a C<sub>1</sub>-C<sub>10</sub> alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, 1,2,3-triazine, 1,2,4-triazine, 1,3,5-triazine, thiophene, pyrrole, selenophene, tellurophene, 5-nitro-thiophene, 5-diethylamino-thiophene, 5-[2,2']-bithiophene and fluorene.

13. (previously presented) A trimer of the formula:



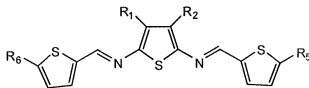
wherein:

R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of H, CN and CO<sub>2</sub>R<sub>4</sub>;

R<sub>4</sub> is a C<sub>1</sub>-C<sub>10</sub> alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, 1,2,3-triazine, 1,2,4-triazine, 1,3,5-triazine, thiophene, pyrrole, selenophene, tellurophene, 5-nitro-thiophene, 5-diethylamino-thiophene, 5-[2,2']-bithiophene and fluorene.

14. (previously presented) The trimer of claim 13, having the formula:



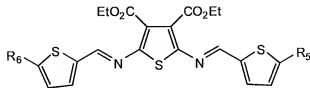
wherein:

R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of H and CO<sub>2</sub>R<sub>4</sub>;

R<sub>4</sub> is a C<sub>1</sub>-C<sub>10</sub> alkyl group; and

R<sub>5</sub> and R<sub>6</sub> are independently selected from the group consisting of H, NO<sub>2</sub>, NEt<sub>2</sub> and 2-thiophene.

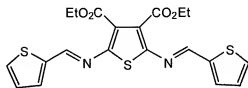
15. (previously presented) The trimer of claim 14, having the formula:



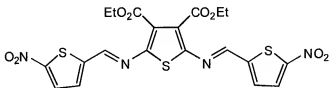
wherein:

R<sub>5</sub> and R<sub>6</sub> are independently selected from the group consisting of H, NO<sub>2</sub>, NEt<sub>2</sub> and 2-thiophene.

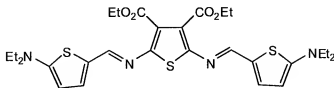
16. (previously presented) The trimer of claim 15, having the formula:



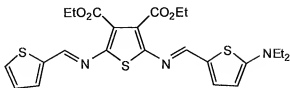
17. (previously presented) The trimer of claim 15, having the formula:



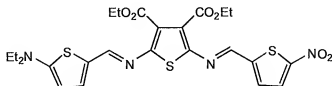
18. (previously presented) The trimer of claim 15, having the formula:



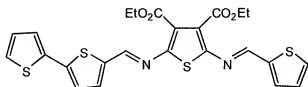
19. (previously presented) The trimer of claim 15, having the formula:



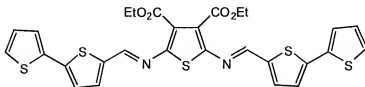
20. (previously presented) The trimer of claim 15, having the formula:



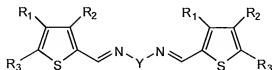
21. (previously presented) The trimer of claim 15, having the formula:



22. (previously presented) The trimer of claim 15, having the formula:



23. (previously presented) A trimer of formula:



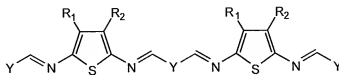
wherein:

$R_1$  and  $R_2$  are independently selected from the group consisting of H and  $\text{CO}_2\text{R}_4$ ;

$R_4$  is a  $\text{C}_1$ - $\text{C}_{10}$  alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene.

24. (previously presented) An oligomer of formula:



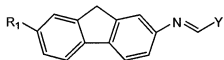
wherein:

R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of H and CO<sub>2</sub>R<sub>4</sub>;

R<sub>4</sub> is a C<sub>1</sub>-C<sub>10</sub> alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene.

25. (previously presented) A fluorene monomer of the formula:

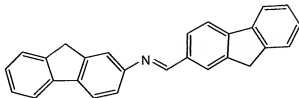


wherein:

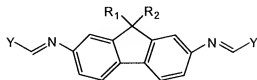
R<sub>1</sub> is selected from the group consisting of H and NH<sub>2</sub>; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene, fluorene, and 2-aminofluorene.

26. (previously presented) The fluorene monomer of claim 25, having the formula:



27. (previously presented) A fluorene monomer of the formula:

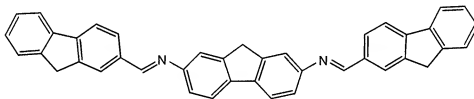


wherein:

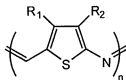
$R_1$  and  $R_2$  are independently selected from the group consisting of H and  $C_1$ - $C_{10}$  alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene, fluorene, 2-aminofluorene, and 5-carboxaldehyde-thiophene.

28. (previously presented) The fluorene monomer of claim 27, having the formula:



29. (previously presented) An electrically conducting polymer based on a repeating thiophene monomer as defined in claim 4, the polymer comprising the formula:



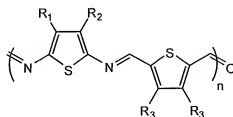
wherein:

$R_1$  and  $R_2$  are independently selected from the group consisting of H, CN,  $C_1$ - $C_{10}$  alkyl group and  $CO_2R_4$ ;

$R_4$  is a  $C_1$ - $C_{10}$  alkyl group; and

n is an integer ranging from 4 to 50 000.

30. (previously presented) The electrically conducting polymer of claim 29, wherein said polymer is treated with a doping agent.
31. (previously presented) The electrically conducting polymer of claim 30, wherein said doping agent is selected from the group consisting of a p-type dopant and an n-type dopant.
32. (previously presented) The electrically conducting polymer of claim 31, wherein said p-type dopant is selected from the group consisting of chlorine, bromine, iodine,  $\text{AlCl}_3$ ,  $\text{FeCl}_3$ ,  $\text{GaCl}_3$ ,  $\text{CF}_3\text{CO}_2\text{H}$ ,  $\text{HCl}$ ,  $\text{H}_2\text{SO}_4$ ,  $\text{CH}_3\text{SO}_3\text{H}$ .
33. (previously presented) The electrically conducting polymer of claim 32, wherein said n-type dopant is selected from the group consisting of sodium naphthalide,  $\text{SbF}_5$ ,  $\text{AsF}_5$ ,  $\text{PF}_5$ ,  $\text{AgX}$ ,  $\text{NO}_2\text{X}$ , and  $\text{NOX}$ .
34. (previously presented) The electrically conducting polymer of claim 33, wherein X is a non-nucleophilic anion.
35. (previously presented) The electrically conducting polymer of claim 34, wherein the non-nucleophilic anion is selected from the group consisting of  $\text{BF}_4^-$ ,  $\text{PF}_6^-$ ,  $\text{SbF}_6^-$ ,  $\text{ClO}_4^-$ , sulfonic acid anions and carboxylic acid anions.
36. (previously presented) An electrically conducting polymer of the formula:



wherein:

$R_1$  and  $R_2$  are independently selected from the group consisting of H, CN,  $\text{C}_1\text{-C}_{10}$  alkyl group and  $\text{CO}_2\text{R}_4$ ;

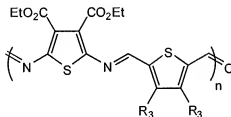


$R_3$  is selected from the group consisting of H and  $C_1$ - $C_{10}$  alkyl group;

$R_4$  is a  $C_1$ - $C_{10}$  alkyl group; and

n is an integer ranging from 4 to 50 000.

37. (previously presented) The electrically conducting polymer of claim 36, having the formula:

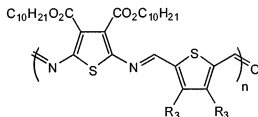


wherein:

$R_3$  is selected from the group consisting of H and  $C_1$ - $C_{10}$  alkyl group;

n is an integer ranging from 4 to 50 000.

38. (previously presented) The electrically conducting polymer of claim 36, having the formula:

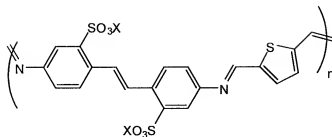


wherein:

$R_3$  is selected from the group consisting of H and  $C_1$ - $C_{10}$  alkyl group;

n is an integer ranging from 4 to 50 000.

39. (previously presented) An electrically conducting polymer of the formula:

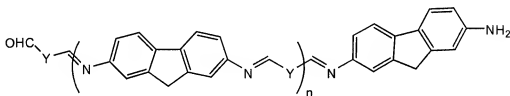


wherein:

X is selected from the group consisting of Na, K and  $\text{Et}_3\text{NH}$ ; and

n is an integer ranging from 4 to 50 000.

40. (previously presented) An electrically conducting polymer of the formula:



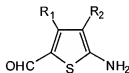
wherein:

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene, fluorene; and

n is an integer ranging from 4 to 50 000.

41. (previously presented) Use of an electrically conducting polymer as defined in claim 29, in applications selected from the group consisting of organic light emitting diodes (OLEDs), polymer light emitting diodes, conducting wires, thin films and active matrices.
42. (previously presented) Use of an electrically conducting polymer as defined in claim 29, in applications selected from the group consisting of microdisplays, laptop computers, televisions, computer monitors, stereos, cellular telephones, displays, fuel cells, battery storage devices, photovoltaic cells, solar cells, liquid crystal devices, optical devices, sensors and detectors.

43. (previously presented) An organic light emitting diode comprising an electrically conducting polymer as defined in claim 29.
44. (previously presented) A polymer light emitting diode comprising an electrically conducting polymer as defined in claim 29.
45. (previously presented) A molecular wire comprising an electrically conducting polymer as defined in claim 29.
46. (previously presented) A thin film comprising an electrically conducting polymer as defined in claim 29.
47. (previously presented) An active matrix comprising an electrically conducting polymer as defined in claim 29.
48. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 29, comprising polymerizing a thiophene monomer of the formula:

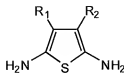


wherein:

R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of H, CN, C<sub>1</sub>-C<sub>10</sub> alkyl group and CO<sub>2</sub>R<sub>4</sub>; and

R<sub>4</sub> is a C<sub>1</sub>-C<sub>10</sub> alkyl group.

49. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 36, comprising reacting a thiophene diamine of the formula:

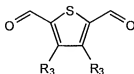


wherein:

$R_1$  and  $R_2$  are independently selected from the group consisting of H, CN,  $C_1$ - $C_{10}$  alkyl group and  $CO_2R_4$ ; and

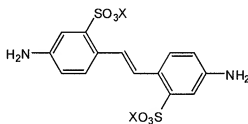
$R_4$  is a  $C_1$ - $C_{10}$  alkyl group,

with an aromatic dialdehyde of the formula:



wherein  $R_3$  is selected from the group consisting of H and  $C_1$ - $C_{10}$  alkyl group.

50. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 39, comprising reacting an aromatic diamine of the formula:

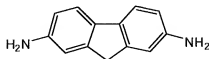


wherein

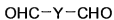
X is selected from the group consisting of Na, K and  $Et_3NH$ ;

with 2,5-thiophene dicarboxaldehyde.

51. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 40, comprising reacting 2,7-diaminofluorene



with an aromatic dialdehyde of the formula:



wherein Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene and fluorene.